

# PATENT SPECIFICATION

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## (54) IMPROVED EASY-OPENING CLOSURE

(71) We, THE BROKEN HILL PROPRIETARY COMPANY LIMITED, a Company incorporated under the laws of the State of Victoria, Australia, of 140 William Street, Melbourne, Victoria, Australia, do hereby declare the invention for which we pray that a patent may be granted to us to be particularly described in and by the following statement:—

This invention relates to improvements in easy-opening closures of the push-in type.

Closures of the push-in type have many advantages. However, when a large single closure is used for carbonated beverage containers, it may be found to be difficult to open, especially when the beverage is warm. It will be appreciated that substantial pressures develop in such containers and if the closure area is large, the opening force required may become quite substantial.

According to the present invention, an easy opening closure of the push-in type including a push-in closure member formed in a sheet metal container member has an easy-opening means formed in the closure member for relieving the pressure within a container including said container member prior to or concurrently with opening of the push-in closure member.

The easy-opening means preferably comprises a further easy-opening closure formed in the closure member. Most preferably, the further closure is of the push-in type formed at any convenient position within the closure member.

Two preferred forms of the invention will now be described by way of example with reference to the accompanying drawings in which:—

Fig. 1 is a plan view of a can end having a closure embodying the invention;

Fig. 2 is a fragmentary sectional view along the line 2—2 in Fig. 1, and,

Figs. 3 and 4 are views corresponding to Figs. 1 and 2 of another form of closure.

The can end 1 shown in Figs. 1 and 2 has a large easy-opening closure 2 of the push-in type formed therein near the expansion ring of the end. The closure 2 is formed by

partially shearing a closure member 3 from the end and causing the sheet metal surrounding the opening 4 so formed to overlap the edge of the closure member 3, say by the method disclosed in United Kingdom Specification No. 1361784. The partial shearing leaves an integral connecting neck 5 which acts as a hinge during opening of the closure 2. A sealant ring 6 is applied to the closure 2 to hermetically seal same.

A small diameter push-in closure 7 is formed in the closure member 3 by the method described above, before, simultaneously with or after the closure 2 is formed. The closure member 8 of this closure 7 is connected to the closure member 3 by a neck of metal 9 adapted to define a hinge during opening and the closure member 8 is formed into an upwardly raised central portion 10 which is easily accessible to a user's finger. Sealant 11 is applied around this closure as shown. The metal surrounding the opening 4 is formed into a raised rim to protect the closure 7 against accidental opening.

In use the closure 2 is opened by depressing the closure member 8 to release any pressure in the container. Then the continuing movement of the opener's finger acts to push-in the closure member 3 to open the closure 2.

The closure 7 is formed asymmetrically with respect to the closure 2 and is located on the hinge side of the centre of the closure 2. While the closure 7 may be located anywhere at least substantially within the closure member 3, the location shown is desirable in that the tendency for the user's finger to plunge into the container is reduced. Being close to the potential hinge 5 of the closure 2, the tendency is for the user's finger to pivot about the hinge during the opening operation thus avoiding excessive movement into the container. In the alternative form of Fig. 3 wherein the primed reference numerals repr similar parts, the small closure 7' has

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the edge portion of its closure member 8' defining part of the edge portion of closure member 3'. This common edge portion is overlapped by the corresponding part of the surround and the opening operation is the same as for the previous embodiment. It should be understood that the small closure of this embodiment may be located anywhere around the periphery of the large closure and the closures may alternatively be shaped as in the first embodiment.

While it is convenient to form the two closures in the same way it will be appreciated that the same pressure releasing effect may be achieved by forming the main closure member with any easy-opening means, such as a pull-out or lift up closure preferably of the type that remains attached to the main closure member. Furthermore, the hinges in the two embodiments may be located towards the centre of the end or at any other suitable position.

It will also be apparent that the invention is equally applicable to push-in closures of other types e.g., those formed by scoring.

#### WHAT WE CLAIM IS:—

1. An easy-opening closure of the push-in type including a push-in closure member formed in a sheet metal container member characterised by an easy-opening means formed in said closure member for relieving the pressure within a container including said container member prior to or concurrently with opening of the push-in closure member.

2. A closure according to Claim 1, wherein said closure member is at least partially severed from said sheet metal container member to define an opening, the sheet metal surrounding said opening at least partly overlapping the closure member, said easy-opening means comprising a further easy-opening closure.

3. A closure according to claim 2, wherein said further easy-opening closure is of the same type as the first-mentioned easy-opening closure.

4. A closure according to claim 2, wherein said closure member is connected to said container member by an integral neck of sheet metal which acts as a hinge during the opening operation, said further easy-opening closure being located asymmetrically of the first-mentioned easy-opening closure towards said neck of metal.

5. A closure according to claim 2, wherein said further easy-opening closure extends into the free edge of the closure member of the first-mentioned easy-opening closure.

6. An easy-opening closure in a sheet metal container member substantially as described with reference to Figs. 1 and 2 or 3 and 4 of the accompanying drawings.

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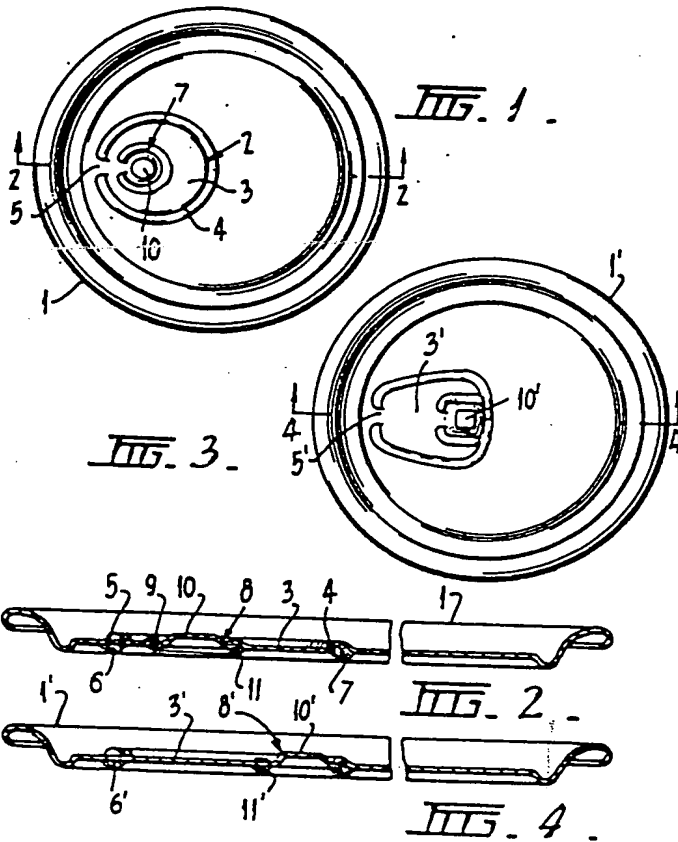
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COMPLETE SPECIFICATION

1 SHEET

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